IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

LIFE TECHNOLOGIES CORPORATION, and APPLIED BIOSYSTEMS, LLC,	)	
Plaintiffs,	)	CIVIL ACTION NO. 2:09-cv-00283
v.	)	DEMAND FOR JURY TRIAL
BIOSEARCH TECHNOLOGIES, INC., BIO-SYNTHESIS, INC., and EUROFINS MWG OPERON INC.,	)	
Defendants.	)	

PLAINTIFFS LIFE TECHNOLOGIES CORPORATION AND
APPLIED BIOSYSTEMS, LLC'S CLAIM CONSTRUCTION BRIEF

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Plaintiffs Life Technologies Corporation and Applied Biosystems, LLC (collectively, Life Tech) submit this brief regarding construction of claim terms and phrases for the patents-in-suit: U.S. Pat. No. 5,538,848 (the '848 patent) (attached as Ex. A); U.S. Pat. No. 5,723,591 (the '591 patent) (attached as Ex. B); U.S. Pat. No. 5,876,930 (the '930 patent) (attached as Ex. C); U.S. Pat. No. 6,030,787 (the '787 patent) (attached as Ex. D); and U.S. Pat. No. 6,258,569 (the '569 patent) (attached as Ex. E) (collectively, the Livak patents).

I. INTRODUCTION

Life Tech and Defendants Biosearch Technologies, Inc. and Eurofins MWG Operon, Inc. (collectively, Biosearch for this brief) dispute the meanings of eight claim terms or phrases. The parties agree that the claim term "oligonucleotide" should be construed verbatim from language in the intrinsic record. Dkt. No. 175–1; *see also* Ex. A, col. 4, ll. 30–36. In stark contrast, Biosearch refuses to agree to Life Tech's proposed construction of "quencher molecule," which is also verbatim from the intrinsic record, as discussed in section III.B.1(a). Similarly, for each of the other disputed terms, Life Tech's position stays true to the description of each invention in the intrinsic record and to the principles of claim construction. On the other hand, Biosearch proposes complex, wordy constructions designed to import additional limitations into the meanings of the disputed terms in blatant attempts to fabricate defenses where none exist. Such gamesmanship should be rejected. For these reasons as further explained below, the Court should adopt Life Tech's position or proposed construction for each of the disputed terms.

II. BACKGROUND

A. THE PATENTED INVENTION AND REAL-TIME MONITORING OF DNA

In the early 1990's, inventors Ken Livak, Sue Flood and Jeff Marmaro, all scientists at the Applied Biosystems Division of the Perkin Elmer Corporation (now Applied Biosystems,

LLC, a subsidiary of Life Technologies Corporation), worked to develop effective ways to analyze reactions involving nucleic acids, such as DNA, in real time. The sequence of DNA provides the blueprints for life by dictating the structure, function, and appearance of all of the cells and tissues in an organism. DNA analysis is a core aspect of medical and genetic research and, because these nucleic acids are too small to observe directly, tools that give scientists the ability to analyze DNA are crucial to this research. Soon joined by Bashar Mullah, the inventors developed and subsequently patented pioneering compositions and methods that facilitate monitoring of a variety of reactions involving DNA.

The patented inventions resulting from this collaboration generally relate to a short strand of DNA, often referred to as a "probe" or an "oligonucleotide probe," which is used to identify target DNA. The term "oligonucleotide" generally refers to a chain of multiple monomers called "nucleotides" that are linked together to form a chain. *See* Dkt. No. 175–1 (agreed construction of "oligonucleotide"). A nucleotide is the simplest unit of DNA. So the oligonucleotide probe of the patented inventions is essentially a chain, or "strand," of nucleotides with specific types of labels attached to it. Generally speaking, DNA is comprised of four different nucleotides, often referred to by the shorthand "A," "C," "G," and "T." It is the sequence of these nucleotides that differentiates oligonucleotides.

An A nucleotide in one strand of DNA can form a bond with a T nucleotide in a different strand. A and T are thus said to be "complementary" bases. Likewise a C nucleotide in a strand can form a bond with, and is thus complementary to, a G nucleotide in a different strand. Thus, a DNA strand with a nucleotide sequence of ACTG would be complementary to a sequence of TGAC. When two oligonucleotide strands have sufficient complementarity, they can bind to each other in a process called "hybridization." Probes can be engineered with sufficient

complementarity to recognize and hybridize with a target DNA sequence. Adding specific types of labels to the probe allows scientists to monitor, in real time, the hybridization of the probe to a complementary target DNA. Similarly, these probes can also be used to monitor, in real time, the process of making multiple copies of the target DNA, generally referred to as DNA "amplification," which uses hybridization as part of its process. *See, e.g.*, Ex. A, Fig. 1 (showing DNA amplification).

The patented inventions allow monitoring of DNA hybridization and amplification reactions without suffering from the disadvantages of prior art. The probes of the claimed inventions are easier to synthesize and demonstrate superior hybridization efficiency than previously known probes. Ex. A. col. 3, ll. 9–13. In practice, this allows for more reliable and efficient manipulation of DNA, which in turn facilitates exploration and analysis of an organism's genetic information.

The two labels attached to the probes of the patented inventions are referred to as a "reporter molecule," which can also be referred to as a "reporter," and a "quencher molecule," which can also be referred to as a "quencher." The reporter is typically a fluorescent molecule. The quencher is capable of absorbing the fluorescence energy of the reporter when the reporter and quencher are in close physical proximity, thereby reducing, or "quenching," the detectable fluorescent signal from the reporter. *See* Ex. B, col. 1, ll. 37–41. The ability of a quencher to absorb fluorescence from a reporter decreases as the two move further apart. *See* Ex. A, col. 2, ll. 1–12. Ultimately, if the reporter and quencher are too far apart, the quencher cannot quench the fluorescence of the reporter at all. Assays employing the patented labeled probes use the fact that changes in the three-dimensional structure, or "conformation," of the probe itself can produce a detectable change in fluorescence. The detection and quantification of these

fluorescent changes in these probes can provide information in real time about the genetic makeup of the targeted DNA.

Previous methods that used changes in fluorescence to analyze target DNA employed oligonucleotide probes with additional specific structural features, or "configurations," designed to place the reporter and quencher in close proximity to one another when the probe was not hybridized to its target in order to allow the quencher to quench the reporter's fluorescence. One such configuration was to attach a reporter to a nucleotide at the end of a probe and to attach a quencher to an internal nucleotide nearby, as shown below in Figure 1. *See* Ex. A, col. 2, ll. 45–65 (citing Lee et al., *Nucleic Acids Research*, 21: 3761–66 (1993) (Ex. F)).

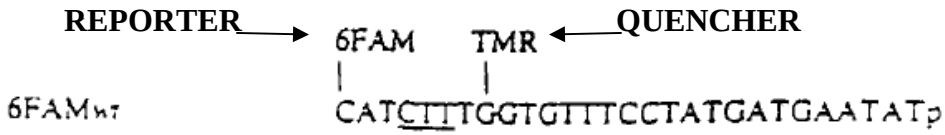

Figure 1

Ex. F, Table 1 (labels added). But, it can be difficult to attach a reporter or quencher to an internal nucleotide of a probe, and the internally attached reporter or quencher interferes with the hybridization efficiency of the probe. *See* Ex. A, col. 2, ll. 45–65. Another configuration was to design the probe so that when it was not hybridized to the target DNA, it hybridized with (or folded back on) itself to form what is referred to as a "hairpin structure." This hairpin structure was designed to bring the reporter and quencher into proximity, placing the labels next to one another and increasing the ability of the quencher to absorb the fluorescence of the reporter as shown below in Figure 2. *See* Ex. B, col. 1, ll. 46–63.

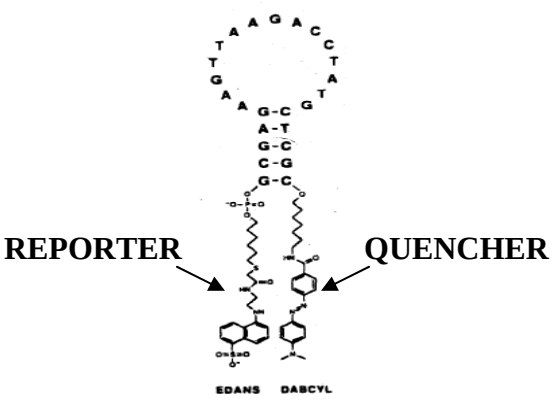

Figure 2

Ex. G, '591 Prosecution History, Aug. 6, 1997 Response, Exhibit 2, Fig. 2 (labels added). However, to form a hairpin structure as taught in the prior art, a probe had to be designed so that multiple nucleotides on each end of the probe were complementary to each other and thus would hybridize as shown above—this made probes difficult to design and could interfere with the hybridization of the probe with the target DNA. *See* Ex. B, col. 1, ll. 46–63.

The inventors of the Livak patents discovered that, contrary to prior assumptions, a quencher could quantifiably quench a reporter's fluorescence even when the two were separated by many nucleotides and could do so in the absence of the hairpin structure to place the reporter and quencher next to one another. Ex. A, col. 3, l. 64–col. 4, l. 4. A difference in fluorescence was discernible when the probe adopted a single-stranded conformation versus when the probe was hybridized to the target DNA. Ex. A, col. 3, l. 9–col. 4, l. 4. By monitoring this change in fluorescence of the reporter, the invention allows for the determination of whether the probe found and hybridized to the target DNA. *Id*. The development of these probes overcame the challenges of making and using the previous probes, and these probes are now widely used to monitor hybridization and amplification of DNA.

B. THE LIVAK PATENTS

Discovery of these novel probe configurations and methods of use in the real-time monitoring of DNA amplification or hybridization led to the inventors filing the five applications, which issued as the Livak patents. All five Livak patents claim priority to the originally filed application, which issued on July 23, 1996 as the '848 patent (Ex. A). The '591 patent (Ex. B) and the '930 patent (Ex. C) issued from continuation-in-parts of the '848 patent. The applicants filed for the other two Livak patents, the '787 patent (Ex. D) and the '569 patent (Ex. E), as successive continuations of the '930 patent.

III. ARGUMENT

A. APPLICABLE LEGAL PRINCIPLES

1. The Court is Not Required to Construe a Claim Term Where the Meaning is Plain.

Generally, the words of a claim are construed to have their plain and ordinary meaning as understood by a person of ordinary skill in the art at the time of the invention. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–13 (Fed. Cir. 2005) (*en banc*). Nevertheless, if the meaning of particular claim language is already clear there is no reason for the Court to rearticulate that language—and potentially import erroneous limitations—through claim construction. *See O2 Micro Int'l Ltd. v. Beyond Innovation Tech. Co.*, 521 F.3d 1351, 1362 (Fed. Cir. 2008). "Claim construction is a matter of resolution of disputed meanings and technical scope, to clarify and when necessary to explain what the patentee covered by the claims, for use in the determination of infringement. It is not an obligatory exercise in redundancy." *U.S. Surgical Corp. v. Ethicon Inc.*, 103 F.3d 1554, 1568 (Fed. Cir. 1997). For this reason, courts routinely decline a party's invitation to construe claim language that is already clear and understandable to a jury. *See, e.g.*, *Northeastern Univ. v. Google, Inc.*, No. 2:07-CV-486, 2010 WL 4511010, *12–14 (E.D. Tex. Nov. 9, 2010) ("[T]he Court declines to construe 'a plurality of home nodes and a plurality of

query nodes.' The plain meaning of the term is sufficiently clear and the patentee never clearly and unambiguously adopted a different construction during prosecution."); *Motorola, Inc. v. VTech Commc'ns, Inc.*, No. 5:07-CV-171, 2009 WL 2026317, 8 (E.D. Tex. July 6, 2009) ("[W]here additional language may be unduly limiting, confusing, or redundant, it is in a court's power to determine that no construction is necessary."). Simply put, "although every word used in a claim has a meaning, not every word requires a construction." *Orion IP, LLC v. Staples, Inc.*, 406 F. Supp. 2d 717, 738 (E.D. Tex. 2005).

"[C]ourts are free to reject overly narrow constructions and rely instead on the plain and ordinary meaning of the claim language." *QPSX Developments 5 Pty Ltd. v. Ciena Corp.*, No. 2:07-CV-118, 2011 WL 1193001, *5 (E.D. Tex. March 28, 2011); *see also Finjan, Inc. v. Secure Computing Corp.*, 626 F.3d 1197, 1207 (Fed. Cir. 2010). Proposed constructions that confuse and/or clutter the plain and ordinary meaning of the claim terms or phrases at issue should be rejected. *See, e.g., Micron Tech., Inc. v. Tessera, Inc.*, 440 F. Supp. 2d 591, 598 (E.D. Tex. 2006). For example, merely reorganizing the claim language fails to assist the jury and should be rejected because it adds nothing to the disputed claim term's plain meaning. *See Microbes, Inc. v. Espoma Co.*, C.A. No. 2:09-CV-237, 2011 WL 1375608, *21 (E.D. Tex. Apr. 12, 2011).

2. The Process for Construing Claims Focuses on the Intrinsic Record.

Where construction of a term is deemed necessary, "[t]he construction that stays true to the claim language and most naturally aligns with the patent's description of the invention, will be, in the end, the correct construction." *Phillips*, 415 F.3d at 1316. To determine the meaning of claim terms and phrases, the Court may look to three primary sources—the language of the claims themselves, the specification, and the prosecution history of each patent-in-suit. *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 979 (Fed. Cir. 1995).

A patentee may act as his or her own lexicographer by specifying a special definition for a claim term or phrase, but any such special definition must be clearly set forth in the specification. *Novartis Vaccines and Diagnostics, Inc. v. Wyeth*, No. 2:08-CV-67, 2011 WL 1576935, *2 (E.D. Tex. Apr. 26, 2011). Where such special definition is clear in the specification, the inventor's lexicography governs; otherwise, unless contradicted by the intrinsic record, the claim term or phrase has its ordinary meaning as understood by one of skill in the art at the time of the invention. *Phillips*, 415 F.3d at 1312–13, 1316.

One of the ways that the patent's specification may be particularly helpful in guiding claim construction is through the specification's description of the preferred embodiments of the invention. Interpretations of the claims that exclude a preferred embodiment from the scope of the claims are "rarely, if ever, correct" and must be established with "highly persuasive evidentiary support." *Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1583 (Fed. Cir. 1996); *see also Oatey Co. v. IPS Corp.*, 514 F.3d 1271, 1276 (Fed. Cir. 2008) ("We normally do not interpret claim terms in a way that excludes embodiments disclosed in the specification.").

While the specification and embodiments it describes should be used to interpret the claims, importing limitations from the specification into the claims is improper. "[P]ersons of ordinary skill in the art rarely . . . confine their definition of terms to the exact representations depicted in the embodiments" disclosed in the specification. *Phillips*, 415 F.3d at 1323. In the absence of a "clear intention to limit the claim scope using 'words or expressions of manifest exclusion or restriction,'" claim language should not be narrowed based on disclosures in the specification. *Linear Tech. Corp. v. ITC*, 566 F.3d 1049, 1058 (Fed. Cir. 2009) (quoting *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 906 (Fed. Cir. 2004)). Courts should avoid importing limitations into the claim where the claim language—as informed by the rest of the

intrinsic record—is clear on its face. *Phillips*, 415 F.3d at 1312–13, 1323; *Linear Tech.*, 566 F.3d at 1057–58.

In addition to the claims and the specification, the Court may consider the prosecution histories of the patents-in-suit, which includes the prior art cited during the examination of each patent. *Phillips*, 415 F.3d at 1317. "[T]he prosecution history provides evidence of how the PTO and the inventor understood the patent." *Id*.

The Court may also consider extrinsic evidence to assist the Court in better understanding the technology and the state of the art at the time of the invention, but such evidence is less reliable and therefore cannot trump the meaning of the disputed term or phrase as understood in light of the intrinsic record. *Phillips*, 415 F.3d at 1318. "Extrinsic evidence is to be used for the court's understanding of the patent, not for the purpose of varying or contradicting the terms of the claims." *Markman*, 52 F.3d at 981.

3. Claim Phrases That Lack "Means" Language are Presumed Not to Invoke § 112, ¶6.

In claim construction, a special analysis applies to claim phrases that invoke a "means" for performing a claimed function. *See* 35 U.S.C. § 112, ¶6. But, in the absence of the word "means," the presumption is that § 112, ¶6 does not apply. *TIP Sys., LLC v. Phillips & Brooks/Gladwin, Inc.*, 529 F.3d 1364, 1373 (Fed. Cir. 2008). While that presumption may be rebutted, without evidence that the patentee intended to invoke § 112, ¶6, the means-plus-function analysis does not apply. *See Greenberg v. Ethicon Endo-Surgery, Inc.*, 91 F.3d 1580, 1584 (Fed. Cir. 1996). In addition, "[m]eans-plus-function claiming applies only to purely functional limitations that do not provide the structure that performs the recited function." *Phillips*, 415 F.3d at 1311. If the disputed claim elements recite clear and definite structures, then § 112, ¶6 simply does not apply. *TIP Sys.*, 529 F.3d at 1373–74 ("Each of the claim

elements which TIP alleges invokes § 112, ¶6 recite clear and definite structures, namely, mouthpiece, earpiece, dialing pad, dialing tone actuating switch, and aperture. Therefore TIP has not successfully rebutted the presumption that § 112, ¶6 does not apply."); *see also CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1369 (Fed. Cir. 2002).

B. CLAIM CONSTRUCTION DISPUTES

The parties dispute the meanings of and whether construction is even necessary for eight claim phrases. Life Tech's position or proposed construction stays true to the intrinsic record in each of these disputes. In contrast, Biosearch's proposed constructions ignore the intrinsic record and attempt to artificially narrow the scope of the disputed claim terms in violation of basic claim construction principles. The Court should therefore adopt Life Tech's position or proposed construction on each disputed claim term.

1. Life Tech's Proposed Constructions Stay True to the Intrinsic Record.

The parties now agree that three terms should be construed: "quencher molecule," "a hairpin structure," and "said reporter/quencher molecule is separated from said quencher/reporter molecule by at least 15 nucleotides." In each case, the intrinsic record supports Life Tech's construction and contradicts Biosearch's proposed construction.

a. "quencher molecule"

Claim Phrase & Affected Claims	Life Tech's Proposed Construction	Biosearch and Eurofins' Proposed Construction
quencher molecule '848 patent: 1–24 '591 patent: 1–15; 26–30 '930 patent: 1–17 '787 patent: 1–6 '659 patent: 1–36	a molecule capable of absorbing the fluorescence energy of an excited reporter molecule, thereby quenching the fluorescence signal that would otherwise be released from the excited reporter molecule	a molecule that absorbs light at one wavelength and emits light at a different wavelength

Life Tech proposes a construction for the term "quencher molecule" that appears verbatim in the specifications of four out of the five asserted patents, all of which are related.[1] *See*, ***e.g.***, Ex. B, col. 1, ll. 37–41. The claims and specifications of the Livak patents repeatedly use the term "quencher molecule" to reference the quenching or absorbing of the detectable fluorescence signal from the excited reporter molecule.[2] *See, e.g.*, Ex. A, Abstract, col. 1, l. 66–col. 2, l. 12, col. 3, ll. 37–44, col. 3, l. 64–col. 4, l. 1, col. 5, ll. 46–58, claims 1, 14, & 24. This use is consistent with the definition of the term in the asserted patents and accordingly, with Life Tech's proposed construction.

In contrast, Biosearch proposes a construction of "quencher molecule" that is unnecessarily limited to quenchers that absorb light at one wavelength and emit light at a different wavelength. While such molecules necessarily fall within the understood meaning of "quencher molecule," one of ordinary skill readily understands that the term has a broader plain meaning. *See, e.g.*, Ex. A, col. 2, ll. 1–5. Moreover, Biosearch's proposed construction is directly contradicted by the intrinsic record. For instance, while Biosearch's construction requires that the quencher "emit light," the specification of the '848 patent provides that "whenever the reporter molecule is excited, the energy of the excited state nonradiatively transfers to the quencher molecule ***where it either dissipates nonradiatively or is emitted*** at a different emission frequency than that of the reporter molecule." *Id*. (emphasis added). The patentee thus expressly contemplated that the quencher molecule taught in the asserted patents not only may release energy absorbed from the reporter molecule by emitting light, but may

[1] Statements made by the patentee in related applications as to the scope of the invention are relevant to claim construction. *Microsoft Corp. v. Multi-Tech Sys., Inc.*, 357 F.3d 1340, 1350 (Fed. Cir. 2004).

[2] The specifications of the '591, '930, '787 and '569 patents are essentially identical and all claim priority to the '848 patent. Therefore, the citations used herein that reference the '848 patent are applicable to all of the Livak patents, while references to the '591 apply to it as well as the specifications of the '930, '787 and '569 patents.

instead release that energy by dissipating it nonradiatively. *See also* Ex. A, col. 5, ll. 46–58. Biosearch's proposed construction completely ignores this nonradiative dissipation disclosed in the specification. Biosearch's efforts to limit "quencher molecule" to a described embodiment is nothing more than a transparent attempt to exclude certain infringing products, e.g., probes that use Black Hole Quenchers (BHQs). Ex. H, BHQ Brochure, at 3. But, Biosearch's desire to fabricate infringement defenses cannot trump the plain meaning of this term or the overwhelming intrinsic support for Life Tech's proposed construction.

As Life Tech's construction is pulled verbatim from four of the Livak patents and is consistent with the term's use throughout the intrinsic record, it should be adopted. In contrast, Biosearch's proposed construction seeks to limit the term to just one possible embodiment in stark contrast to the patentees' expressed intent that the term maintain a broader, plain meaning. As such, Biosearch's proposed construction should be rejected.

b. "a hairpin structure"

Claim Phrase & Affected Claims	**Life Tech's Proposed Construction**	**Biosearch and Eurofins' Proposed Construction**
a hairpin structure '591 patent: 1–15; 26–30 '930 patent: 1–17 '787 patent: 1–6 '569 patent: 1–36	where the probe hybridizes to itself to form a loop such that the quencher molecule is brought into proximity with (next to) the reporter molecule in the absence of a complementary nucleic acid sequence to prevent the formation of the hairpin structure	a single stranded oligonucleotide sequence that is hybridized with itself to form a double stranded duplex of 3 or more contiguous basepairs at the detection temperature of the assay

Life Tech's construction for the term "a hairpin structure" is derived from the patentees' express description of this term in the specifications of four of the five Livak patents. *See*, ***e.g.***,

Ex. B, col. 1, ll. 49–54. The claims, specification, and prosecution history of the Livak patents support Life Tech's proposed construction and undercut Biosearch's construction.

(i) *The Intrinsic Record Supports Life Tech's Construction.*

The specifications of the '591, '930, '787, and '569 patents each distinguish the invention from the prior art teaching of self-hybridizing hairpin probes, such as those hairpin probes taught in European Patent Application No. 0 601 889 A2. *See, e.g.,* Ex. B, col. 1, ll. 46–63. The patentee represented in the specification that

> [p]robes containing a reporter molecule—quencher molecule pair have been developed for hybridization assays where the probe forms a hairpin structure, *i.e.*, ***where the probe hybridizes to itself to form a loop such that the quencher molecule is brought into proximity with the reporter molecule in the absence of a complementary nucleic acid sequence to prevent the formation of the hairpin structure***. WO/90/03446; European Patent Application No. 0 601 889 A2.

Id. This sentence of the specification not only seeks to distinguish the invention from the prior art, but also, presents the patentees' clear understanding of the term "hairpin structure" and forms the basis of Life Tech's proposed construction. *See Phillips*, 415 F.3d at 1312–13.

Further, during prosecution the patentee confirmed that the specification's characterization of "a hairpin structure" was the patentee's understanding of the term. Ex. G, at 2; *see also Phillips*, 415 F.3d at 1317 (confirming the relevance of representations made in the patents' prosecution history). The patentees noted that the above quoted statement "***clearly defines*** what is intended by the term 'hairpin structure.'" *Id*.

(ii) *Life Tech's Proposed Construction Provides Guidance for the Jury.*

Life Tech's proposed construction of the term "hairpin structure" only diverges from the express wording of that characterization in one respect. In order to further assist the jury in its assessment of the scope of the claims, Life Tech's proposed construction also clarifies that one of ordinary skill in the art would have understood the phrase "into proximity with" in the context

of the intrinsic record to mean "(next to)." *See U.S. Surgical*, 103 F.3d at 1568 ("[C]laim construction is intended to . . . provide meaning to a lay juror.").

Specifically, Life Tech's construction shows how the patentee and others of skill in the art understood the difference between the invention and the self-hybridizing hairpin probes discussed in the intrinsic record. The cited self-hybridizing probe consisted of a DNA sequence where multiple nucleotides on each of the two ends of the sequence are complementary to each other. *See, e.g.*, Ex. I, EP 0 601 889 A2, at 15; Ex. G, Exhibit 2, at 304. The reporter and quencher on this probe were attached to the complementary portions of sequences. *See* Ex. I, at 15; Ex. G, Exhibit 2, at 304. As discussed in the Background Section, these complementary sequences specifically recognize and hybridize to each other, forming a stem while the non-complementary part of the sequence forms a loop, as shown below in Figure 3. Ex. G, Exhibit 2, at 304; Ex. C, col. 1, ll. 49–67.

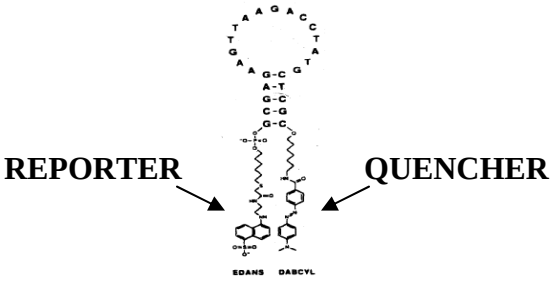

Figure 3

Ex. G, Exhibit 2, Fig. 2 (labels added). Because the reporter and quencher are attached to the complementary sequences, the formation of this hairpin structure brings the reporter and quencher next to each other, as illustrated above in Figure 3. *See* Ex. G, Exhibit 2, at 304; *see also* Ex. J, Mergny et al., *Nucleic Acids Research*, 22 (6): 920, 925–26 (1994).

This understanding is further reflected in the prosecution history. The applicants added the negative limitation that the claimed probe does not "hybridize with itself to form a hairpin structure," in response to a rejection over a prior art reference that discloses self hybridizing

probes. *See* Ex. K, Oct. 22, 1996 Am. Under 37 CFR § 1.115, at 12; Ex. G, at 3. The applicants explained that the cited reference, and other art with self-hybridizing probes, taught use of a hairpin structure to bring the reporter and quencher together. *See* Ex. K, at 12; Ex. G, at 3. Following these arguments, the examiner granted the '591 patent.

The applicants and examiner discussed this reference again in the prosecution of the '930 patent, and the applicants again emphasized that this reference teaches formation of a hairpin to keep the reporter and quencher molecules "close to each other." Ex. L, '930 Prosecution History, Feb. 10, 1997 Am., at 12. Following this exchange, the examiner granted the '930 patent. When allowing this patent, the examiner recognized that this reference "teaches a probe which is designed to form a hairpin when the probe is not hybridized to a target molecule as a means of bringing the reporter and the quenche[r] molecules together." Ex. M, '930 Prosecution History, Notice of Allowability, at 2. Finally, extrinsic evidence confirms this construction. WEBSTER'S 3RD INTERNATIONAL DICTIONARY UNABRIDGED from 1993 defines "proximity" to mean: "the quality or state of being proximate, next, or very near (as in time, place, relationship)." Ex. N, at 1828.

Life Tech's proposed construction thus adds the parenthetical "(next to)" to the specifications' characterization of the "hairpin structure" to ensure that the finder of fact fully understands what the patentees meant when they characterized "hairpin structure" as well as the intended scope of the claims after they were amended to include that limitation. This further clarification of "proximity" as Life Tech proposes will help the jury in their assessment of infringement.

(iii) *Defendants' Construction Contradicts the Intrinsic Record.*

Apparently not content with the express definition of this term found in the specification, Biosearch is instead attempting to import additional limitations into the claims to distinguish its infringing probes. Biosearch's proposed construction is, however, completely divorced from the intrinsic record, importing extraneous limitations that actually read out preferred embodiments from the patents' specification.

Biosearch's construction requires an "oligonucleotide sequence that is hybridized with itself to form a double stranded duplex of 3 or more contiguous base pairs." However, there is no intrinsic support for importing the "3 or more contiguous base pairs" limitation. Indeed, inclusion of this limitation in the term's construction would read out probes taught in the asserted patents' examples which include overlapping sequences of 4 base pairs. The specification of each of the Livak patents provides Probe P2 as one of the examples. *See, e.g.*, Ex. A, Table 1. During the prosecution of the '591 patent, the examiner specifically noted that Probe P2 has complementary base pairs, which could cause the probe to hybridize with itself to form a double-stranded duplex of 3 or more contiguous base pairs, as shown below in Figure 4.

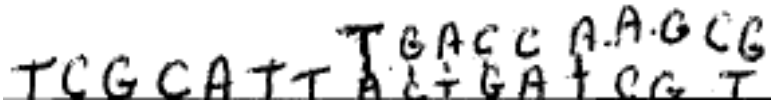

Figure 4

Ex. O, '591 Prosecution History, Apr. 2, 1997 Examiner Interview. Specifically, Figure 4 shows that the examiner identified that P2 has four contiguous bases (the TGAC at the top center of the drawing) that are complementary and so might hybridize to another four bases of the probe (the ACTG at the bottom center of the drawing). A person of skill in the art would certainly understand that the intrinsic record shows that merely having three complementary base pairs does not form the "hairpin structure" of the claim limitations. Nor has Biosearch identified

sufficient intrinsic evidence to warrant importing its proposed limitation "at the detection temperature of the assay."

Finally, Biosearch's proposed construction is not consistent with Biosearch Technologies, Inc.'s representations as to its own understanding of the term hairpin structure. In fact, in no less than five of Biosearch Technologies Inc.'s own patents, United States Patent Nos. 7,019,129 (Ex. P, col. 2, ll. 27–35), 7,160,996 (Ex. Q, col. 1, ll. 30–37), 7,344,701 (Ex. R, col. 2, ll. 37–45), 7,582,432 (Ex. S, col. 2, ll. 35–43), and 7,705,150 (Ex. T, col. 2, ll. 33–40), Biosearch Technologies, Inc. copies, verbatim, the description of hairpin that appears in the '591, '930, '787, and '569 Livak patents. Biosearch Technologies, Inc. should not succeed in its argument that this Court should adopt a construction unsupported by the intrinsic record while simultaneously representing to the public that its understanding of hairpin is the same as that proffered by Life Tech as the ***proper*** construction of the term.

As Life Tech's construction is pulled essentially verbatim from the Livak patents and is consistent with the term's use throughout the intrinsic record, it should be adopted. In contrast, Biosearch's proposed construction is wholly divorced from the term's use throughout these patents and its own. As such, Biosearch's proposed construction should be rejected.

c. "said reporter/quencher molecule is separated from said quencher/reporter molecule by at least 15 nucleotides"

Claim Phrase & Affected Claims	**Life Tech's Proposed Construction**	**Biosearch and Eurofins' Proposed Construction**
said reporter/quencher molecule is separated from said quencher/reporter molecule by at least 15 nucleotides '848 patent: 4, 6, 15 '591 patent: 2, 4, 27, 32 '930 patent: 3, 5 '787 patent: 3, 5	one member of a reporter-quencher pair is attached to a nucleotide of the probe and the other member to a nucleotide at least 15 nucleotides away. This construction will be applied to other claims with different numbers of nucleotides.	the reporter and quencher molecules are at least 15 nucleotides apart, inclusive of the nucleotides to which the reporter and quencher molecules are attached. The interpretation will be applied to other claims with different numbers of nucleotides.

Life Tech's construction for the term "said reporter/quencher molecule is separated from said quencher/reporter molecule by at least 15 nucleotides" is derived from the patentees' express descriptions of this term in the specifications of all five of the Livak patents. The specifications instruct that "a separation of about 6–16 nucleotides . . . is typically achieved by attaching one member of a reporter-quencher pair to the 5′ end of the probe and the other member to a base 6–16 nucleotides away." *See, e.g.*, Ex. A, col. 2, ll. 49–57; *see also* Ex. B, col. 3, l. 62–col. 4, l. 5.

This definition is consistent with the prosecution history of the patents-in-suit. For example, in the prosecution history of the '591 patent, the applicants described that Table 1 of the Lee reference, (Ex. F), which is copied below as Figure 5, "teaches an energy transfer probe where the donor and acceptor are separated by 7 nucleotides." Ex. K, at 12. This table shows two energy transfer probes.

Table 1. Primers and probes

Oligonucleotide	Sequence (5′—3′)	Predicted Tm (°C)[a]	Strand Sense and Location in CFTR cDNA Sequence[b]
PCR pr1	CTTCACTTCTAATGATGATTATGGG	67	+ 1526–1550
PCR pr2	TGGCATGCTTTGAGACG	67	− 1706–1689
	6FAM TMR		
6FAMwt	CATCTTTGGTGTTTCCTATGATGAATATp	70	+ 1650–1677
	TET TMR		
TETmut	TATCATTGGTGTTTCCTATGATGAATATp	69	+ 1647–1677

The deletion region in the wt probe is underlined; the deletion site in the *mut* probe is indicated with an arrowhead. p = 3′-phosphate
[a] in PCR buffer with 4.2 mM free Mg^{2+} at 0.2 μM probe concentration
[b] Riordan, J.R. *et al.* (1989) *Science* 245, 1066–1073.

Figure 5

The first probe in Figure 5 is named, "6FAMwt," and has a reporter, "6FAM," that is attached to a "C" nucleotide. Ex. F, Table 1. The quencher, "TMR," is attached to a "G" nucleotide that is seven nucleotides away from the "C" nucleotide that is attached to the reporter. *Id*. Likewise,

the second probe in Figure 5 is named, "TETmut," and has a reporter, "TET," that is attached to a "T" nucleotide. *Id*. The quencher, "TMR," is attached to a "G" nucleotide that is seven nucleotides away from the "T" nucleotide that is attached to the reporter. *Id.* Applicants' description of the donors and acceptors in these probes as "separated by 7 nucleotides," (Ex. K, at 12), follows the description of separation in the Livak patents, and thus follows Life Tech's proposed construction. As consistent with the claim term's use throughout the intrinsic record, Life Tech's proposed construction should be adopted.

2. By Repeating the Claim Term Within Its Proposed Construction, Biosearch Concedes That "Terminal Nucleotide" and "Monitoring the Fluorescence" Do Not Require Construction.[3]

a. "terminal nucleotide"

Claim Phrase & Affected Claims	Life Tech's Proposed Construction	Biosearch and Eurofins' Proposed Construction
terminal nucleotide '848 patent: 8–13; 17–22 '591 patent: 6–11 '930 patent: 7–12	No construction is required for this term.	a terminal nucleotide unit that comprises a base, a ribose or deoxyribose structure and a phosphate or modified phosphate structure

"Terminal nucleotide" means exactly what it says; no construction is required. *See QPSX*, 2011 WL 1193001, *5. Indeed, Biosearch does not construe this claim phrase—instead it merely repeats the term verbatim, and then proceeds to append unwarranted limitations. A primary purpose of claim construction is to assist the trier of fact in understanding terms of a technical nature. *U.S. Surgical*, 103 F.3d at 1568. By doing nothing more in their proposed

[3] The Court should not have to devote resources to the issuance of advisory opinions on the construction of claim terms for which the parties do not have a concrete dispute regarding infringement or invalidity, ***e.g.***, the construction of "terminal nucleotide" or "monitoring the fluorescence." *See*, ***e.g.***, *Semiconductor Energy Lab Co. v. Samsung Elecs. Co.*, No. 09-CV-01, 2009 WL 3731959, *1 (W.D. Wis. Nov. 4, 2009); *see also Wilson Sporting Goods Co. v. Hillerich & Bradsby Co.*, 442 F.3d 1322, 1327 (Fed. Cir. 2006) ("While a claim is not to be construed in light of the accused device, in an infringement case, it must inevitably be construed in context of the accused device." (citations omitted)). Biosearch has not identified a ***genuine*** dispute between the parties regarding infringement or invalidity of the "terminal nucleotide" or "monitoring the fluorescence" limitations and thus no construction is necessary.

construction than parroting back the very words of the term they assert needs defining, Biosearch is not providing any guidance to the jury. *See Microbes*, 2011 WL 1375608, *21. Rather, Biosearch has expressly conceded that the jury necessarily understands what a terminal nucleotide is. Thus, ***no*** construction of the term is required.[4]

Biosearch's proposed construction also improperly limits the broad disclosure of "nucleotides" in the intrinsic record. *See, e.g.*, Ex. A, col. 4, l. 29–col. 5, l. 8. The requirement in Biosearch's proposed construction that the terminal nucleotide unit be comprised of a base and a ribose or deoxyribose structure ignores the modified base and sugar moieties explicitly contemplated by the description of nucleotides in the specification. *Id*. Further, Biosearch's proposal that the terminal nucleotide be limited to one having either a phosphate or modified phosphate structure contradicts the broad language used in the patents, which only refers to the probes "[g]enerally" having phosphodiester linkages and notes that the linkages between nucleotides could be "phosphodiester bonds or analogs thereof." Ex. A, col. 4, ll. 36–51.

Biosearch's use of the exact term language in its proposed construction concedes that the finder of fact will understand the term "terminal nucleotide," and thus no construction is necessary. Additionally, Biosearch's proposed construction is improper because it seeks to import limitations that directly contradict the teachings of the intrinsic record.

[4] To the extent any construction of "terminal nucleotide" is required, it has its plain and ordinary meaning as evidenced by its use in the intrinsic record—the end monomer of an oligonucleotide. *See* Ex. A, col. 3, ll. 49–55, col. 4, ll. 30–36, claims 8–13 & 17–22; Ex. B, claims 6–11; Ex. C, claims 7–12.; Ex. U, '848 Prosecution History, May 19, 1995 Office Action, at 4.

b. "monitoring the fluorescence"

Claim Phrase & Affected Claims	Life Tech's Proposed Construction	Biosearch and Eurofins' Proposed Construction
monitoring the fluorescence '848 patent: 1–24 '930 patent: 1–15 '787 patent: 1–6	No construction is required for this term.	monitoring the generation of fluorescence at a particular wavelength only at the conclusion of an amplification reaction

The term "monitoring the fluorescence" does not require construction. The term is plain, simple, and its meaning will be readily understood by the finder of fact. Similar to its proposed construction of the term "terminal nucleotide," Biosearch, through its proposed construction of "monitoring the fluorescence," again concedes that the jury will have no problem whatsoever understanding what the term means. Biosearch's construction merely parrots back the words of the term, and only then proceeds to saddle the term with additional unsupported and extraneous limitations. Biosearch concedes with its construction that the finders of fact can grasp the plain meaning of each of the words of this term, and Biosearch has not come forward with any intrinsic support for limiting this term beyond its plain meaning. Thus, no construction of the term is required. [5]

In addition to being unnecessary, Biosearch's proposed construction also improperly creates new limitations with no intrinsic support. There is nothing in the intrinsic record that requires Biosearch's first artificial limitation that "monitoring the fluorescence" is limited to "monitoring the generation of fluorescence at a particular wavelength." The only mention of wavelength in the '848 patent specification occurs in the example, which describes measuring the emission of the reporter at one wavelength and the emission of the quencher at another

[5] To the extent any construction is necessary, "monitoring the fluorescence" has its plain meaning as exemplified by the intrinsic record—checking on the fluorescence during the reaction. *See, e.g.*, Ex. A, col. 1, ll. 33–52; Ex. B, col. 1, ll. 30–35, col. 4, ll. 34–57, col. 5, l. 60–col. 6, l. 13, col. 8, l. 21–col. 9, l. 6.

wavelength. Ex. A, col. 8, ll. 9–29. This example explicitly monitors fluorescence at two wavelengths, not one. Moreover, it is well settled that, without evidence of an intent on the part of the patentee to so narrow claim scope, it is improper to limit a claim to just what is taught in a single example. *Phillips*, 415 F.3d at 1323. This is particularly true, where, as here, the specification as a whole indicates that the patentee intended that the term retain its broader, plain and ordinary meaning. *Id*.; *see also* Ex. A, col. 1, ll. 33–52, col. 3, l. 29–col. 4, l. 4.

Additionally, there is no legitimate basis to narrow "monitoring the fluorescence" with Biosearch's second artificial limitation that the monitoring occur "only at the conclusion of an amplification reaction." This part of Biosearch's proposed construction is directly contrary to the language of the claims and would improperly purport to convert the "monitoring" step from one that contemplates an ongoing, real-time process of taking fluorescence measurements to one limited to a single measurement of fluorescence only after amplification has occurred. Yet there is no evidence for either limiting the measurements to a single measurement or limiting the type of reaction to reactions involving amplification. For example, the asserted independent claims of the '930 patent and the '787 patent involve "monitoring the fluorescence . . . in order to detect the hybridization of said target polynucleotide to said oligonucleotide probe." Ex. C, claim 1; Ex. D, claim 1. These "monitoring the fluorescence" steps concern hybridization, not amplification. To construe "monitoring the fluorescence" to solely relate to amplification reactions would be directly contrary to the claim language of the '930 and the '787 patents.

Biosearch again concedes that a lay juror understands the term "monitoring the fluorescence" by repeating the words of the term verbatim in its proposed construction. As a whole, Biosearch's proposed construction improperly attempts to narrow the scope of the claimed invention and thus should be rejected.

3. No Construction is Required for the Lengthy Terms Biosearch Argues Are Means-Plus-Function Terms.

a. "said oligonucleotide probe/sequence existing in/is capable of adopting at least one single-stranded conformation when unhybridized/not hybridized to said target polynucleotide where said quencher molecule quenches the fluorescence of said reporter molecule, said oligonucleotide probe/sequence existing in/is capable of adopting at least one conformation when hybridized to said target polynucleotide where the fluorescence of said reporter molecule is unquenched"

Claim Phrase & Affected Claims	Life Tech's Proposed Construction	Biosearch and Eurofins' Proposed Construction
said oligonucleotide probe/sequence existing in/is capable of adopting at least one single-stranded conformation when unhybridized/not hybridized to said target polynucleotide where said quencher molecule quenches the fluorescence of said reporter molecule, said oligonucleotide probe/sequence existing in/is capable of adopting at least one conformation when hybridized to said target polynucleotide where the fluorescence of said reporter molecule is unquenched '848 patent: 1–24 '591 patent: 1–15; 26–30 '930 patent: 1–17 '787 patent: 1–6	No construction is required for this term.	Means + function/steps + function without acts interpretation This is a functional limitation for which there is no corresponding structure in the claims sufficient to give this function. The law states that only structures that correspond to the function are covered by the claims. However, there is no "corresponding structure" disclosed; as such, the claim term is indefinite.

The meanings of the specific words and phrases in the lengthy passage that Biosearch asks the Court to construe are not in dispute. Thus, it is not contested that the words of this claim phrase have their plain and ordinary meaning. The dispute concerning this 50+ word passage from the claim is whether the claim language is so lacking in structure that it overcomes the presumption against the application of 35 USC § 112, ¶6.

When a claim term lacks "means for" or "step for" language, there is a presumption that 35 U.S.C. § 112, ¶6 does not apply. *TIP Sys.*, 529 F.3d at 1373. Biosearch takes the inexplicable position that the entire phrase is a function, lacking any disclosure of structure, therefore rebutting presumption against the application of § 112, ¶6. To the contrary, the disputed claim language is replete with structural elements.

First and foremost the "oligonucleotide probe" to which this term is directed has a clear and definite structure. An oligonucleotide probe is a DNA structure made up of a number of nucleotide monomers. Biosearch has unequivocally conceded this point by agreeing that the term "oligonucleotide" has a clearly structural based construction. Dkt. No. 175–1. In addition to oligonucleotide probe, the disputed term also includes at least the following elements, each of which has a readily discernible structure: "single-stranded conformation," "target polynucleotide," "quencher molecule," and "reporter molecule." Based upon the term's recitation of multiple structural elements, Biosearch fails to rebut the presumption that 35 U.S.C. § 112, ¶6 does not apply. *See Greenberg*, 91 F.3d at 1584; *see also Microprocessor Enhancement Corp. v. Texas Instruments Inc.*, 520 F.3d 1367, 1375 (Fed. Cir. 2008); *see also Paragon Solutions, LLC v. Timex Corp.*, 566 F.3d 1075, 1091 (Fed. Cir. 2009).

This claim phrase is readily understandable and does not need to be construed. Biosearch's proposed construction(s) and indefiniteness argument are legally insufficient and in fact wholly unsupported by the evidence. As such, Biosearch's proposed construction should thus be rejected.[6]

[6] Furthermore, Biosearch waived any opportunity to allege § 112, ¶6 and indefiniteness arguments by failing to include any such allegations in their invalidity contentions. Ex. V, Biosearch Invalidity Contentions; L.R. 3–3(c) and (d).

b. "the fluorescence intensity of said reporter molecule when said oligonucleotide sequence is hybridized to said target polynucleotide is at least a factor of 6 greater than the fluorescence intensity of said reporter molecule when said oligonucleotide sequence is not hybridized to said target polynucleotide"

Claim Phrase & Affected Claims	**Life Tech's Proposed Construction**	**Biosearch and Eurofins' Proposed Construction**
the fluorescence intensity of said reporter molecule when said oligonucleotide sequence is hybridized to said target polynucleotide is at least a factor of 6 greater than the fluorescence intensity of said reporter molecule when said oligonucleotide sequence is not hybridized to said target polynucleotide '591 patent: 1–14	No construction is required for this term.	<u>Means + function interpretation</u> This is a functional limitation for which there is no corresponding structure in the claims sufficient to give this function. As the law states that only corresponding structures are covered by the claims, the only structure identified by patentee as corresponding to this limitation is probe P2-27, a specific probe of 27 nucleotides with a 5' FAM (reporter) and a 3' TAMRA (quencher). Therefore, the claims containing this term are limited to the use of the P2-27 probe. <u>Alternative Interpretations</u> In the event that this clause is not found to invoke § 112, 6th paragraph, alternative interpretations are proposed: 1. As noted by patentee, probe P2-27 of Table 3 ('848 patent) meets this limitation. However, the conditions under which the data of Table 3 were run are not outlined. As is well known, the fluorescence properties of fluorophores attached to oligonucleotides vary widely based on a number of things including solution conditions, linkers and composition of the fluorophores. As testing conditions are not outlined, the claim term is too indefinite and ambiguous to interpret. 2. (FIR)hybridized $\geq$ 6(FIR)unhybridized "FIR" is the "fluorescence intensity of the reporter"

Claim Phrase & Affected Claims	Life Tech's Proposed Construction	Biosearch and Eurofins' Proposed Construction
		The only conditions outlined in the patent are for the data generated in Table 2 ('848 patent) as follows. The FIR measurements are done in a solution of 10 mM Tris-HCl (pH 8.3), 50 mM KCl and 4 μM MgCl2. The FIR measurement is done by exciting the complex at the reporter's excitation maxima and detecting at the reporter's emission maxima. The measurements are done in this solution with 50 nM of the probe, and then with the addition of 100 nM target sequence.

As with the previous term, the meaning of the specific words and phrases in the lengthy passage that Biosearch asks the Court to construe are not in dispute. The dispute is again whether U.S.C. § 112, ¶6 is applicable to this term. It is not.

As with the previous term, this term does not include "means for" or "step for" language, therefore, raising the presumption that 35 U.S.C. § 112, ¶6 does not apply. *See TIP Sys.*, 529 F.3d at 1373. Again, as with the previous term, this term incorporates a number of structural elements, including oligonucleotide, target polynucleotide, reporter molecule, and quencher molecule. Nevertheless, Biosearch asserts this claim term is wholly functional and lacks structure But, in its alternate interpretations, Biosearch specifically delineates a number of clearly structural components within the term, including the aforementioned oligonucleotide, reporter and target polynucleotide. Biosearch cannot have it both ways—arguing on the one hand that the phrase is subject to means-plus-function analysis because it is merely functional language and lacks corresponding structure, while on the other hand acknowledging the specific corresponding structures identified in the claim term. Biosearch's own acknowledgement and

recitation of multiple structural features in its "Alternative Interpretations" dictates that § 112, ¶6 cannot apply. *See TIP Sys.*, 529 F.3d at 1373.

Alternatively, in the absence of a means-plus-function analysis, Biosearch argues that this claim phrase should be held indefinite. Biosearch's indefiniteness argument is based on the unfounded assertion that because testing conditions related to measuring fluorescent intensities of a hybridized probe are not recited in the claim, potential variation of such conditions make the term too indefinite and ambiguous to interpret. This is a baseless, purely self-serving, argument, in light of the fact that optimization of oligonucleotide hybridization conditions were routine and well known in the art at the time of that patent. *See*, *e.g.*, Ex. W, Blanchard et al., *Genome Res.*, 2: 234–240 (1993); Ex. X, Bej et al., *Crit. Rev. Biochem. Mol. Biol.*, 26(3/4): 301–34 (1991).

Biosearch's secondary fallback alternate "Interpretation" is directed only toward that portion of the claim phrase that addresses the fluorescence intensity of the reporter molecule having to be at least a factor of 6 greater when the probe is bound or hybridized to a DNA target in comparison to its unbound or un-hybridized state. However, Biosearch did not indicate in its required disclosures that this term standing alone needed to be construed. But far from offering a proposed construction for this element within the larger term, Biosearch instead simply provides unsolicited commentary on what appears to be its interpretation of elements of the patented invention. Without proposing a construction, Biosearch asserts that because reaction conditions, such as salt and probe concentrations, were specifically outlined for exemplary embodiments, such conditions should be imported as limitations into this claim phrase. Nevertheless, limitations may not be imported from the specification into the claims. *Phillips*, 415 F.3d at 1323; *see also Linear Tech.*, 566 F.3d at 1057–58.

This claim phrase is readily understood by one of ordinary skill. Biosearch's proposed construction(s) and indefiniteness arguments are further unsupported by the facts and law and should be rejected.

c. "the ratio of the fluorescence intensities of said reporter molecule to said quencher molecule when said probe is hybridized to said target polynucleotide being at least about a factor of 6/is at least 6 times greater than the ratio of the fluorescence intensities of said reporter molecule to said quencher molecule when said probe is single-stranded/said oligonucleotide sequence is not hybridized to said target polynucleotide"

Claim Phrase & Affected Claims	Life Tech's Proposed Construction	Biosearch and Eurofins' Proposed Construction
the ratio of the fluorescence intensities of said reporter molecule to said quencher molecule when said probe is hybridized to said target polynucleotide being at least about a factor of 6/is at least 6 times greater than the ratio of the fluorescence intensities of said reporter molecule to said quencher molecule when said probe is single-stranded/said oligonucleotide sequence is not hybridized to said target polynucleotide '848 patent: 24 '591 patent: 15 '930 patent: 17	No construction is required for this term.	Means + function/steps + function without acts interpretation This is a functional limitation for which there is no corresponding structure in the claims sufficient to give this function. As the law states that only corresponding structures are covered by the claims, the only structure corresponding to this limitation is probe A1-26, a specific probe of 26 nucleotides with a 5' FAM (reporter) and a 3' TAMRA (quencher). Therefore, the claims containing this term are limited to the use of the A1-26 probe. Alternative Interpretations In the event that this clause is not found to invoke § 112, 6th paragraph, alternative interpretations are proposed: 1. As noted by patentee, probe A1-26 of Table 3 ('848 patent) meets this limitation. However, the conditions under which the data of Table 3 were run are not outlined. As is well known, the fluorescence properties of labeled probes vary widely based on a number of things including solution conditions and composition. As testing conditions are not outlined, the claim term is

Claim Phrase & Affected Claims	Life Tech's Proposed Construction	Biosearch and Eurofins' Proposed Construction
		too indefinite and ambiguous to interpret. 2. [FIR/FIQ]hybridized $\geq$ 6([FIR/FIQ]unhybridized) "FIR" is the "fluorescence intensity of the reporter", and "FIQ" is the "fluorescence intensity of the quencher" The only conditions outlined in the patent are for the data generated in Table 2 ('848 patent) as follows. The measurements are done in a solution of 10 mM Tris-HCl (pH 8.3), 50 mM KCl and 4 μM MgCl2. The FIR measurement is done by exciting the complex at the reporter's excitation maxima and detecting at the reporter's emission maxima. The FIQ measurement is done by exciting the complex at the reporter's excitation maxima and detecting at the quencher's emission maxima. The measurements are done in this solution with 50 nM of the probe, and then with the addition of 100 nM target sequence.

The meaning of this 50+ word claim phrase is clear, and the words used have their plain and ordinary meaning. As with the terms argued in sections III.B.3.(a–b) there is a presumption that this phrase is not means-plus-function based on the absence of "means for" and "step for" language. And like those two terms, this term is replete with the same structural elements. Accordingly, Biosearch's allegation that 35 U.S.C. § 112, ¶6 applies to this term is not correct and, therefore, its proposed construction based on a means-plus-function analysis likewise fails.

Alternatively, in the absence of a means-plus-function analysis, Biosearch argues that this claim phrase should be held indefinite. Biosearch's indefiniteness argument is again based on the faulty assertion that the absence of a recitation of specific testing conditions related to measuring fluorescent intensities within the claim language somehow makes this term too

indefinite and ambiguous to interpret. Nevertheless, the optimization of oligonucleotide annealing conditions were routine and well known in the art at the time of that patent and one of ordinary skill would readily understand such conditions. *See, e.g.*, Exs. W & X.

As to Biosearch's proposed secondary alternative "Interpretation," as noted above, what Biosearch is proposing is not a construction but simply references pulled from the specifications of the asserted patents relating to disclosed examples. Biosearch is not proposing an alternative construction but is rather parroting back language from examples unfettered to the words or structure of the stipulated term. As such an exercise is contrary to settled principles of claim construction and cannot assist the trier of fact in understanding the disputed term's meaning, it should likewise be rejected. *See U.S. Surgical*, 103 F.3d at 1568; *Linear Tech*, 566 F.3d at 1058.

This claim phrase is readily understood by one of ordinary skill. Biosearch's proposed construction(s) and indefiniteness arguments are further unsupported by the facts and law and should be rejected.

IV. CONCLUSION

Life Tech's positions and proposed constructions stay true to the intrinsic record and the principles of claim construction. In contrast, Biosearch's proposed constructions add unnecessary words, import limitations from the specification or extrinsic evidence, and distort and ignore the law of claim construction. The Court should therefore reject each one. In light of the above arguments, Life Tech respectfully requests that the Court adopt Life Tech's proposed constructions.

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Respectfully submitted,

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CERTIFICATE OF SERVICE

The undersigned certifies that the foregoing document was filed electronically in compliance with Local Rule CV-5(a). As such, this document was served on all counsel who are deemed to have consented to electronic service. Local Rule CV-5(a)(3)(A). Pursuant to Fed. R. Civ. P. 5(d) and Local Rule CV-5(d) and (e), all other counsel of record not deemed to have consented to electronic service were served with a true and correct copy of the foregoing by email and/or fax, on this the 3rd day of June, 2011.

/s/ Leisa Talbert Peschel